ENTERED See p.5

PCT09

RAW SEQUENCE LISTING DATE: 05/23/2001 PATENT APPLICATION: US/09/831,233 TIME: 16:09:29

Input Set : A:\BB1129 seq lst.txt
Output Set: C:\CRF3\05232001\1831233.raw

Output Set. C: (CRF5 \05252001 \1651255.Faw

- 3 <110> APPLICANT: E. I. du Pont de Nemours and Company
- 5 <120> TITLE OF INVENTION: Plant Glutamine Amidotransferase Homologs
- 7 <130> FILE REFERENCE: BB1129
- C--> 9 <140> CURRENT APPLICATION NUMBER: US/09/831,233
- C--> 10 <141> CURRENT FILING DATE: 2001-05-04
 - 12 <150> PRIOR APPLICATION NUMBER: 60/107,275
 - 13 <151> PRIOR FILING DATE: 1998-11-05
 - 15 <160> NUMBER OF SEQ ID NOS: 15
 - 17 <170> SOFTWARE: Microsoft Office 97
 - 19 <210> SEQ ID NO: 1
 - 20 <211> LENGTH: 1956
 - 21 <212> TYPE: DNA
 - 22 <213> ORGANISM: Impatiens balsamia
 - 24 <400> SEQUENCE: 1
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 - 27 gagtgtgagg aacgccatcc gcacacttgg atttgatatc aaagatgtgc aaaagccaga 180
 - 28 ggatatteta aatgetaage geettatett teetggegtt ggggeetttg caeetgeaat 240
 - 29 ggatgttett attegtaaag ggetggetga ageaetetgt acttacatte agaatgateg 300 30 acettteetg ggtatatgee tgggattgea getaetettt gagteaagtg aagaaaatgg 360
 - 31 tocaattoaa ggtottggot tgattootgg acgggttggg cgttttgaat catccaatgg 420
 - 32 tttaagggtg ccacatattg gatggcatgc cttggatata aaggaagggt cagcaatttt 480
 - 33 agatgatgtg gggaatcaac atgtgtattt tgttcactca tatcgagcca atgccgagga 540
 34 caacaaagag tggatttcat ctacatgcag ctatggtgac gattttattg catccattca 600
 - 34 caacaaagag tggatttcat ctacatgcag ctatggtgac gattttattg catccattca 600 35 gaagggaaat gttcatgcag tccaatttca tcccgagaag agtggaggtg ttggactttc 660
 - 36 catattgaga agatttttga atgctgattc ctttaacaac aaaagacaga agccaatgaa 720
 - 37 tggaaagget tetaaacttg caaagagagt aattgettge ettgatgtga gggcaaatga 780
 - 38 taatggggat cttgttgtaa ccaagggaga ccaatatgat gtgagagaac gtacagaaga 840
 - 39 gaatgaggtc agaaaccttg gcaagcctgt tgaacttgct gggcagtatt atttagacgg 900
 - 40 tgctgatgag gtcagcttct taaacattac tggtttccgg gacttccctc taggcgatct 960
 - 41 acceatgeta caggiettige aacgegeate tgaaaacgit titigigeeat taactgiegg 1020 42 gggiggeate agggattita etgatgeaaa tggaaggiat tattetagie tagaagigge 1080
 - 43 ttcagagtat ttcagatcgg gcgccgataa ggtttcgatc ggaagtgatg cagtttacac 1140
 - 44 tgctgaggaa tatattaaaa ccggagtgaa gacaggaaag agcagcatag agcagatatc 1200
 - 45 tacagtatat ggtaaccagg cagtggttgt aagcattgat cctcgccgag tttacttgag 1260 46 aaaacccgat gaagtagaat ttaaagccat caaagtaagc catccaggtc caaacggtga 1320
 - 47 ggaatatgcc tggtatcagt gcactgttaa tggtggacga gaagggagac ccatcggagc 1380
 - 48 ttatgaacta gctaaggctg ttgaggaact tggagctgga gaaatattat tgaactgcat 1440
 - 49 tgattgtgat ggtcaaggaa aaggattcga tatagatctg atcaagctaa tatccgatgc 1500 50 tgtgaacatt cctgttatcg caagcagcgg tgcaggagtc gctgatcact tctccgaagt 1560
 - 51 ctttaatgaa accaacgcat ctgctgccct tgcagctggc attttccatc gcaaagaggt 1620
 - 52 tccaattaag gctgttaaag agcacttgtt gaaggaaggg attgaagtta gattgtaagg 1680
 - 53 cgagaatcac ttggaagaaa tttcatcttg aagttcaatt ttgttacaca agagatttcc 1740 54 ttctttcttg gcctatgtga tatttattta tttatgtttt gctattgaat tattgttatt 1800
 - 55 attattttgg catttgttat ttgaatagat ttgagttttt agacettggt gtgteetgtt 1860
 - 56 tatctctagg ccatgttttg tggattatat acaagtgtga aattaaataa ataaatcgta 1920
 - 57 tgaatttatg cttttaaaaa aaaaaaaa aaaaaa 1956

RAW SEQUENCE LISTING DATE: 05/23/2001 PATENT APPLICATION: US/09/831,233 TIME: 16:09:29

Input Set : A:\BB1129 seq lst.txt
Output Set: C:\CRF3\05232001\I831233.raw

59 <210> SEQ ID NO: 2 60 <211> LENGTH: 558 61 <212> TYPE: PRT 62 <213> ORGANISM: Impatiens balsamia 64 <400> SEQUENCE: 2 65 His Glu Lys Glu Leu Ala Ser Thr Lys Pro Gln Asn Gly Phe Arg Ile 68 Arg Ala Ala Leu Ala Gly Ala Gly Gly Asp Ser Val Val Thr Leu Leu 71 Asp Tyr Gly Ala Gly Asn Val Arg Ser Val Arg Asn Ala Ile Arg Thr 35 74 Leu Gly Phe Asp Ile Lys Asp Val Gln Lys Pro Glu Asp Ile Leu Asn 77 Ala Lys Arg Leu Ile Phe Pro Gly Val Gly Ala Phe Ala Pro Ala Met 80 Asp Val Leu Ile Arg Lys Gly Leu Ala Glu Ala Leu Cys Thr Tyr Ile 85 90 83 Gin Asn Asp Arg Pro Phe Leu Gly Ile Cys Leu Gly Leu Gln Leu Leu 105 86 Phe Glu Ser Ser Glu Glu Asn Gly Pro Ile Gln Gly Leu Gly Leu Ile 120 115 89 Pro Gly Arg Val Gly Arg Phe Glu Ser Ser Asn Gly Leu Arg Val Pro 135 92 His Ile Gly Trp His Ala Leu Asp Ile Lys Glu Gly Ser Ala Ile Leu 150 155 95 Asp Asp Val Gly Asn Gln His Val Tyr Phe Val His Ser Tyr Arg Ala 165 170 98 Asn Ala Glu Asp Asn Lys Glu Trp Ile Ser Ser Thr Cys Ser Tyr Gly 180 185 101 Asp Asp Phe Ile Ala Ser Ile Gln Lys Gly Asn Val His Ala Val Gln 104 Phe His Pro Glu Lys Ser Gly Gly Val Gly Leu Ser Ile Leu Arg Arg 215 107 Phe Leu Asn Ala Asp Ser Phe Asn Asn Lys Arg Gln Lys Pro Met Asn 230 110 Gly Lys Ala Ser Lys Leu Ala Lys Arg Val Ile Ala Cys Leu Asp Val 245 250 113 Arg Ala Asn Asp Asn Gly Asp Leu Val Val Thr Lys Gly Asp Gln Tyr 260 265 116 Asp Val Arg Glu Arg Thr Glu Glu Asn Glu Val Arg Asn Leu Gly Lys 280 119 Pro Val Glu Leu Ala Gly Gln Tyr Tyr Leu Asp Gly Ala Asp Glu Val 295 122 Ser Phe Leu Asn Ile Thr Gly Phe Arg Asp Phe Pro Leu Gly Asp Leu 310 315 125 Pro Met Leu Gln Val Leu Gln Arg Ala Ser Glu Asn Val Phe Val Pro 325 330 128 Leu Thr Val Gly Gly Gly Ile Arg Asp Phe Thr Asp Ala Asn Gly Arg RAW SEQUENCE LISTING DATE: 05/23/2001 PATENT APPLICATION: US/09/831,233 TIME: 16:09:29

Input Set : A:\BB1129 seq lst.txt
Output Set: C:\CRF3\05232001\1831233.raw

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131 Tyr Tyr Ser Ser Leu Glu Val Ala Ser Glu Tyr Phe Arg Ser Gly Ala
132
            355
                                360
                                                     365
134 Asp Lys Val Ser Ile Gly Ser Asp Ala Val Tyr Thr Ala Glu Glu Tyr
                            375
                                                 380
        370
137 Ile Lys Thr Gly Val Lys Thr Gly Lys Ser Ser Ile Glu Gln Ile Ser
                        390
140 Thr Val Tyr Gly Asn Gln Ala Val Val Ser Ile Asp Pro Arg Arg
                                         410
143 Val Tyr Leu Arg Lys Pro Asp Glu Val Glu Phe Lys Ala Ile Lys Val
144
                420
146 Ser His Pro Gly Pro Asn Gly Glu Glu Tyr Ala Trp Tyr Gln Cys Thr
                                440
                                                     445
147
            435
149 Val Asn Gly Gly Arg Glu Gly Arg Pro Ile Gly Ala Tyr Glu Leu Ala
152 Lys Ala Val Glu Glu Leu Gly Ala Gly Glu Ile Leu Leu Asn Cys Ile
                                             475
                        470
155 Asp Cys Asp Gly Gln Gly Lys Gly Phe Asp Ile Asp Leu Ile Lys Leu
                    485
                                         490
158 Ile Ser Asp Ala Val Asn Ile Pro Val Ile Ala Ser Ser Gly Ala Gly
                                    505
                500
161 Val Ala Asp His Phe Ser Glu Val Phe Asn Glu Thr Asn Ala Ser Ala
                                520
                                                     525
            515
164 Ala Leu Ala Ala Gly Ile Phe His Arg Lys Glu Val Pro Ile Lys Ala
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167 Val Lys Glu His Leu Leu Lys Glu Gly Ile Glu Val Arg Leu
168 545
                        550
170 <210> SEQ ID NO: 3
171 <211> LENGTH: 587
172 <212> TYPE: DNA
173 <213> ORGANISM: Zea mays
175 <220> FEATURE:
176 <221> NAME/KEY: unsure
177 <222> LOCATION: (495)
179 <220> FEATURE:
180 <221> NAME/KEY: unsure'
181 <222> LOCATION: (518)
183 <220> FEATURE:
184 <221> NAME/KEY: unsure
185 <222> LOCATION: (577)
187 <220> FEATURE:
188 <221> NAME/KEY: unsure
189 <222> LOCATION: (582)
191 <400> SEQUENCE: 3
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193 eccegggeec eggegeegee gtaegteece etteggegte gecageegee teetggetee 120
194 ggctccttca tcgcctgctc cagcgtgcct gcgtgacata agcgtcgatt gattggcgag 180
195 aaaggggacg aatgcagccg ccgttgcagg cgcagggagc aatggctaac gtcgccgcta 240
196 tecteacegt eccetgetee gegggeegee geeegaageg gageaaceag eecegeggat 300
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197 gcggctccgt ctccgtctcc gtctccgtcc gtgcgtcctc cggcgcaaac acggtgactc 360

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/831,233

Input Set: A:\BB1129 seq lst.txt

DATE: 05/23/2001
TIME: 16:09:29

Output Set: R:\BBI129 seq 1st.txt
Output Set: C:\CRF3\05232001\1831233.raw

198 tgctggacta cggcggggg aacgtacgca gcgtgcgcaa cgcaattcgc tacctcggct 420 199 tcgacatccg cgacgtgcag agcccggarg acatcgtcgc cggcggaayg ggtcgtcttt 480 W--> 200 cccggtgtcg gcgcnttcgg ctccgccatg gacgtccnca ccaggacggg catgccaacg 540 W--> 201 cacteegtga gtacateeaa agggaacgee cetteenagg enetgee 203 <210> SEQ ID NO: 4 204 <211> LENGTH: 130 205 <212> TYPE: PRT 206 <213> ORGANISM: Zea mays 208 <220> FEATURE: 209 <221> NAME/KEY: UNSURE 210 <222> LOCATION: (90) 212 <220> FEATURE: 213 <221> NAME/KEY: UNSURE / 214 <222> LOCATION: (93) 216 <220> FEATURE: 217 <221> NAME/KEY: UNSURE / 218 <222> LOCATION: (109) 220 <220> FEATURE: 221 <221> NAME/KEY: UNSURE 222 <222> LOCATION: (115) 224 <220> FEATURE: 225 <221> NAME/KEY: UNSURE 226 <222> LOCATION: (129) 228 <400> SEQUENCE: 4 229 Met Gln Pro Pro Leu Gln Ala Gln Gly Ala Met Ala Asn Val Ala Ala 232 Ile Leu Thr Val Pro Cys Ser Ala Gly Arg Arg Pro Lys Arg Ser Asn 20 235 Gln Pro Arg Gly Cys Gly Ser Val Ser Val Ser Val Ser Val Arg Ala 236 238 Ser Ser Gly Ala Asn Thr Val Thr Leu Leu Asp Tyr Gly Ala Gly Asn 50 55 241 Val Arg Ser Val Arg Asn Ala Ile Arg Tyr Leu Gly Phe Asp Ile Arg 242 70 W--> 244 Asp Val Gln Ser Pro Glu Asp Ile Val Xaa Ala Glu Xaa Val Val Phe W--> 247 Pro Gly Val Gly Ala Phe Gly Ser Ala Met Asp Val Xaa Thr Arg Thr 248 100 105 W--> 250 Gly Met Xaa Asn Ala Leu Arg Glu Tyr Ile Gln Arg Glu Arg Pro Phe 251 115 120 W--> 253 Xaa Gly 254 130 256 <210> SEQ ID NO: 5 257 <211> LENGTH: 1084 258 <212> TYPE: DNA 259 <213> ORGANISM: Zea mays 261 <400> SEQUENCE: 5 262 actagtggta acaaaaggcg atcaatatga tgtaagagat catactagca gcaaagaggt 263 aagaaacctt ggcaagccag tcgatttagc aagccagtac tacatagacg gtgctgatga

RAW SEQUENCE LISTING DATE: 05/23/2001 PATENT APPLICATION: US/09/831,233 TIME: 16:09:29

Input Set : A:\BB1129 seq lst.txt

Output Set: C:\CRF3\05232001\I831233.raw

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264 ggtcagcttc ttgaatataa ctggtttccg tgactttcca ttgggtgatt tgccaatgct
265 agaggtactg cgttgtgcct ctgaaaaggt ttttgtgcca cttacagttg gtgggggcat
266 acgagacttc acagatgcaa atggaagata ctactcaagt ttggaggtag catcagaata
267 tttcaggtcc ggtgctgaca aaatttcaat tggaagtgat gctgtttatg ctgctgaagc
268 ctttttacag actggtgtaa agacagggaa aagcagcttg gagcaaatct ctagagtata
269 tggcaatcag gctgtagttg tcagtattga tcctcgacgg gtatatgtca aaagtcaaga
270 agatgtgcca tttaaaactg taaaggtgtc cactaaaggt ccatcgggag aagaatatgc
271 atggtaccag tgcacagtga atggtggacg tgatagccga gctataggag catatgaact
272 agcgaaagct gtggaagaat tgggcgcagg agaaatactt cttaactgca ttgattgtga
                                                                        660
273 tggccaaggt tgtggatttg acatagattt ggttaaaatg gtttctgatg ctgtgacaat
                                                                        720
274 ccctgtcatt gcgagcagtg gtgctggagc tgttcaacat ttttctgaaa tttttgagaa
                                                                        780
275 aacaaatgct tctgctgccc ttgctgctgg cattttccac cggaaagagg ttcctatact
276 agcagtgaaa gagcatctgg tcaatgctgg tgtggaggtc agggtgtaac agggagatcc
277 ttcggtttat tgaaatattc ttgtttgatg tcacaactgc tatcagttct gtttctctga
278 tgtcgcaact gctatcagat ctgttggtgg cagctggcag tgcataggcc cctgtcgaga 1020
279 actgcagttt ggtaataaat taataatgtg atgcttaaca gattaaaaaa aaaaaaaaa 1080
280 aaaa
282 <210> SEQ ID NO: 6
283 <211> LENGTH: 295
284 <212> TYPE: PRT
285 <213> ORGANISM: Zea mays
287 <400> SEQUENCE: 6
288 Leu Val Val Thr Lys Gly Asp Gln Tyr Asp Val Arg Asp His Thr Ser
291 Ser Lys Glu Val Arg Asn Leu Gly Lys Pro Val Asp Leu Ala Ser Gln
                 20
294 Tyr Tyr Ile Asp Gly Ala Asp Glu Val Ser Phe Leu Asn Ile Thr Gly
             35
297 Phe Arg Asp Phe Pro Leu Gly Asp Leu Pro Met Leu Glu Val Leu Arg
298
         50
                             55
300 Cys Ala Ser Glu Lys Val Phe Val Pro Leu Thr Val Gly Gly Ile
301 65
                         70
303 Arg Asp Phe Thr Asp Ala Asn Gly Arg Tyr Tyr Ser Ser Leu Glu Val
                                         90
306 Ala Ser Glu Tyr Phe Arg Ser Gly Ala Asp Lys Ile Ser Ile Gly Ser
                100
                                    105
309 Asp Ala Val Tyr Ala Ala Glu Ala Phe Leu Gln Thr Gly Val Lys Thr
            115
                                120
                                                    125
312 Gly Lys Ser Ser Leu Glu Gln Ile Ser Arg Val Tyr Gly Asn Gln Ala
        130
                            135
                                                140
315 Val Val Val Ser Ile Asp Pro Arg Arg Val Tyr Val Lys Ser Gln Glu
316 145
                        150
                                            155
318 Asp Val Pro Phe Lys Thr Val Lys Val Ser Thr Lys Gly Pro Ser Gly
                    165
                                        170
321 Glu Glu Tyr Ala Trp Tyr Gln Cys Thr Val Asn Gly Gly Arg Asp Ser
322
                                    185
324 Arg Ala Ile Gly Ala Tyr Glu Leu Ala Lys Ala Val Glu Glu Leu Gly
            195
                                200
327 Ala Gly Glu Ile Leu Leu Asn Cys Ile Asp Cys Asp Gly Gln Gly Cys
```



Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/831,233

DATE: 05/23/2001
TIME: 16:09:30

Input Set : A:\BB1129 seq lst.txt
Output Set: C:\CRF3\05232001\1831233.raw

L:9 M:270 C: Current Application Number differs, Replaced Application Number L:10 M:271 C: Current Filing Date differs, Replaced Current Filing Date L:200 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:3 $L\!:\!200~M\!:\!341~W\!:$ (46) "n" or "Xaa" used, for SEQ ID#:3 L:201 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:3 L:201 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 L:244 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:4 L:244 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 L:247 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:4 L:247 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 L:250 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:4 L:250 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 $L:253 \ M:258 \ W:$ Mandatory Feature missing, <223> not found for SEQ ID#:4 L:253 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 L:451~M:258~W: Mandatory Feature missing, <223> not found for SEQ ID#:7 L:451 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 L:453 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:7 L:453 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 L:454 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:7 L:454 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 L:455 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:7 $L\!:\!455$ M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 L:456 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:7 L:456 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 L:457 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:7 L:457 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 L:458 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:7 L:458 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 $L:502 \ M:258 \ W:$ Mandatory Feature missing, <223> not found for SEQ ID#:8 $L\!:\!502$ M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8 L:505 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:8 L:505 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8 L:508 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:8 L:508 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8 L:511 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:8 L:511 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8 L:585 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:9 $L\!:\!585$ M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 L:587 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:9 L:587 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 L:588 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:9 $L:588 \ M:341 \ W:$ (46) "n" or "Xaa" used, for SEQ ID#:9 L:589 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:9 L:589 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 L:590 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:9 $L:590 \ M:341 \ W:$ (46) "n" or "Xaa" used, for SEQ ID#:9 L:591 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:9 L:591 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9

VERIFICATION SUMMARY

DATE: 05/23/2001 PATENT APPLICATION: US/09/831,233 TIME: 16:09:30

Input Set : A:\BB1129 seq lst.txt

Output Set: C:\CRF3\05232001\1831233.raw

L:615 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:10

L:615 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10

L:663 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:13

L:663 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13

L:697 M:258 W: Mandatory Feature missing, <223> not found for SEQ ID#:14

L:697 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14